

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MICHAEL L. BEIGEL, NATHANIEL POLISH,  
STEVEN R. FRANK and ROBERT E. MALM

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Appeal No. 2005-0171  
Application No. 10/064,380

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ON BRIEF

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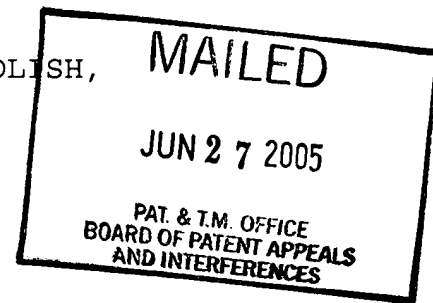
Before JERRY SMITH, BARRETT, and RUGGIERO, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the Examiner's rejection of claims 1-17, 20-25, 32, 36-45, 47-68, and 70-80.

The disclosed invention relates to an electronic identification system in which the identifying agency and the object to be identified cooperate in the identification process. More particularly, an interrogator (reader) is inductively coupled to a transponder (tag) in which the reader is associated with the identifying agency and the tag is associated with the object to be



identified. Two-way communication is provided between the reader and the tag through inductively-coupled coils. The reader drives its coils through capacitors at a driving frequency and the tag detects the reader's signal by way of the tag's inductively-coupled coil connected in parallel with a capacitor.

Claims 1 and 32 are illustrative of the invention and read as follows:

1. A reader for use with a tag that communicates data to the reader, the reader comprising:

a transformer having a plurality of windings, each winding having first and second terminals;

a coil driver having first and second output terminals;

two capacitors, each capacitor having first and second terminals, the first and second output terminals of the coil driver being connected to the first terminals of the capacitors, the second terminals of the capacitors being connected to the first and second terminals of a winding of the transformer;

a coil having first and second terminals connected respectively to the first and second end terminals of a winding of the transformer;

a data extractor for extracting data from the signal induced in the coil, the data extractor having first and second terminals connected respectively to first and second terminals of a winding of the transformer.

32. A reader for use with a tag that transmits a data sequence to the reader by repeating a message a plurality of times, the message comprising a preamble, a tag data group of T bits, and an error-detecting group of E bits, the preamble consisting of a sync sequence of S bits, the tag data group and the error-detecting

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group possibly including false-sync sequences, the reader comprising:

a means for receiving the data sequence transmitted by the tag;

a means for detecting each sync sequence in the received data sequence;

a means for identifying the preamble;

a means for extracting the tag group from the received data sequence utilizing the identification of the preamble.

The Examiner relies on the following prior art:

McFarlane	3,223,779	Dec. 14, 1965
Kurusu	3,587,017	Jun. 22, 1971
Ogita et al. (Ogita)	4,278,980	Jul. 14, 1981
Chatelot	4,864,633	Sep. 05, 1989
Waraksa et al. (Waraksa)	4,942,393	Jul. 17, 1990
Buchele	5,276,910	Jan. 04, 1994
Carroll et al. (Carroll)	5,517,194	May 14, 1996

(filed Feb. 10, 1994)

Claims 20-24 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on an inadequate disclosure. Claims 32 and 72 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Waraksa. Claims 36-40 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Buchele. Claims 70, 71, and 73-80 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Carroll. Claims 1, 3, 41 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chatelot and Kurusu. Claims 1, 2, 4, 41, 42, 44, and 45 stand rejected under 35 U.S.C.

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§ 103(a) as being unpatentable over the combination of Chatelot and Ogita. Claims 5-13, 25, 47-60, and 62-64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Carroll alone. Claims 14-17, 61, and 64-68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Carroll in view of McFarlane.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Brief (dated April 23, 2004, Paper No. 8) and Answer (mailed July 1, 2004, Paper No. 9) for the respective details.

#### OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner and the evidence of anticipation and obviousness relied upon by the Examiner as support for the prior art rejections. After reviewing and taking into consideration Appellants' arguments set forth in the Brief along with the Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer, we affirm-in-part.

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The rejection of claims 20-24 under the enablement requirement of the first paragraph of 35 U.S.C. § 112.

In order to comply with the enablement provision of the statute, the disclosure must adequately describe the claimed invention so that the artisan could practice it without undue experimentation. In re Scarbrough, 500 F.2d 560, 566, 182 USPQ 298, 305 (CCPA 1974); In re Brandstadter, 484 F.2d 1395, 1404, 179 USPQ 286, 293 (CCPA 1973); and In re Gay, 309 F.2d 769, 774, 135 USPQ 311, 316 (CCPA 1962). If the Examiner has a reasonable basis for questioning the sufficiency of the disclosure, the burden shifts to Appellants to come forward with evidence to rebut this challenge. In re Doyle, 482 F.2d 1385, 1392, 179 USPQ 227, 232 (CCPA 1973), cert. denied, 416 U.S. 935 (1974); In re Brown, 477 F.2d 946, 950, 177 USPQ 691, 694 (CCPA 1973); and In re Ghiron, 442 F.2d 985, 992, 169 USPQ 723, 728 (CCPA 1971). However, the burden is initially upon the Examiner to establish a reasonable basis for questioning the adequacy of the disclosure. In re Strahilevitz, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982); In re Angstadt, 537 F.2d 498, 504, 190 USPQ 214, 219 (CCPA 1976); and In re Armbruster, 512 F.2d 676, 677, 185 USPQ 152, 153 (CCPA 1975).

The Examiner has questioned the sufficiency of Appellants' disclosure in describing the specific weighted integrations set

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forth in claims 20-24. After careful review of the arguments of record, however, we are in agreement with Appellants' position as stated in the Brief. As asserted by Appellants (Brief, pages 30-32), the Examiner, aside from a general allegation of insufficiency, has never specifically indicated how Appellants' disclosure would not be enabling with regard to the particular features recited in claims 20-24. We find no basis for the Examiner's conclusion that one of ordinary skill would not be able to implement, without undue experimentation, the claimed weighted integration functions, especially in view of Appellant's disclosure at paragraphs 56-62 of the specification, as well as the evidence presented in the Attachments I and II appended to the Brief, which had previously been submitted in the amendment filed October 29, 2003, Paper No. 5.

In view of the above, since we find that the Examiner has not established a reasonable basis for challenging the sufficiency of the instant disclosure with respect to claims 20-24, we will not sustain the rejection of claims 20-24 under the enabling clause of the first paragraph of 35 U.S.C. § 112.

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The 35 U.S.C. § 102(b) rejection of claims 32  
and 72 based on Waraksa.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of indecency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With respect to the appealed independent claims 32 and 72, the Examiner attempts to read the various limitations on the disclosure of Waraksa. In particular, the Examiner directs attention to the illustration in Waraksa's Figure 9 illustration along with the accompanying description beginning at column 5, line 55 (and including column 9, lines 40-55) of Waraksa.

Appellants' arguments in response assert a failure of Waraksa to disclose every limitation in independent claims 32 and 72 as is required to support a rejection based on anticipation. In the arguments appearing at pages 38-40 of the Brief, Appellants' assertions focus on the contention that, in contrast to the claimed

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invention, Waraksa does not disclose any structure which would detect "each sync sequence in the received data sequence," the data sequence "possibly including false-sync sequences."

After reviewing the Waraksa reference in light of the arguments of record, we are in general agreement with Appellants' position as expressed in the Brief. We agree with Appellants that Waraksa has no disclosure of any structure which would distinguish between a genuine sync sequence and a false-sync sequence since Waraksa avoids the possibility of false-sync sequences appearing in the data sequence by attaching a SYNC pattern to the beginning of the Miller encoded code word.

We recognize that the Examiner has taken the position (Answer, pages 10 and 11) that the "false-sync sequence" limitation is not a positive limitation and is in effect an alternative language limitation which need not be given patentable weight. We find no basis for the Examiner interpreting the claim language in this manner. The "false-sync sequence" language is indeed a positive limitation since it establishes conditions and an environment in which the claimed data sequence and preamble identifying functions must operate.

We further disagree with the Examiner (Answer, page 11) that the "false-sync sequence" language can be given no patentable



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weight since such language appears only in the claim preamble and merely recites the intended use of a structure. Contrary to the Examiner's contention that the claim preambles merely recite intended use, the data sequence limitations appearing in the preambles of claims 32 and 72 are directly tied to the data sequence detecting and preamble identifying features recited in the body of the claims and, as discussed supra, establish conditions under which these functions must operate. As pointed out by Appellants (Brief, page 39), the sole reason for the claimed detecting and identifying limitations in the body of claims 32 and 72 is because of the need to process data sequences which could possibly contain false-sync sequences. Our reviewing court has stated in Bell Communications Research, Inc. V. Vitalink Communications Corp., 55 F.3d 615, 620, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995) that:

[A] claim preamble has the import that the claim as a whole suggests for it. In other words, when the claim drafter chooses to use both the preamble and the body to define the subject matter of the claimed invention, the invention is so defined.

Each of claims 32 and 72 refers in the body of the claim to the detecting of a data sequence and the identifying of a preamble of the data sequence. We thus regard the preamble recitations which describe the contents of the data sequence as providing

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antecedent reference for the corresponding elements in the body of the claims, and limiting the claimed subject matter accordingly.

For the above reasons, since all of the claim limitations are not present in the disclosure of Waraksa, we do not sustain the Examiner's 35 U.S.C. § 102(b) rejection of independent claims 32 and 72.

The 35 U.S.C. § 102(e) rejection of claims 36-40  
based on Buchele.

In making this rejection, the Examiner makes reference (Answer, page 5) to the driving circuitry including a bridge circuit of 4 FETs illustrated in Figure 2 of Buchele. With respect to claims 36 and 39, argued together by Appellants, we find no convincing arguments from Appellants that convince us of any error in the Examiner's position which asserts that the Figure 8 structure of Buchele discloses a capacitor coupled to a coil with driving circuitry including a bridge circuit of four FETs as claimed. To whatever extent Appellants' argument (id., at 49) that Buchele does not have a "high power PWM signal" at opposing transistor junctions may be correct, there is no such requirement appearing in claims 36 and 39.

We also agree with the Examiner, with respect to Appellants' argument based on In re Donaldson Co., 16 F.3d 1189, 29 USPQ2d 1845

(Fed. Cir. 1994) that Buchele's coupling structure does not include a transformer, that the Figure 2 embodiment of Appellants' disclosed coupling arrangement also does not include a transformer. It is also our view that the Examiner is correct in the assertion (Answer, page 14) that Appellants' Donaldson argument with respect to the driving circuit features of claim 36 is unpersuasive because of the presence of significant structure in the claim which modifies the "means for driving" claim language.

In view of the above discussion, since all of the claimed limitations are present in the disclosure of Buchele, the Examiner's 35 U.S.C. § 102(e) rejection of appealed claims 36 and 39 is sustained.

Turning to a consideration of the Examiner's 35 U.S.C. § 102(e) rejection of claims 37, 38, and 40, we note that, while we found Appellants' arguments to be unpersuasive with respect to the rejection of claims 36 and 39, we reach the opposite conclusion with respect to claims 37, 38, and 40. We agree with Appellants that the language of claim 37, upon which claim 38 depends, recites a bridge circuit which "comprises two series-connected P- and N-channel field effect transistors connected in parallel," and is therefore in direct contrast to the circuit structure of Buchele which discloses only n-channel devices. Since there is no response

by the Examiner to Appellants' arguments, we are constrained on the record before us to reverse the anticipatory rejection of claims 37 and 38.<sup>1</sup> Similarly, the rejection of claim 40 is also reversed since the Examiner has never explained how the circuitry disclosed by Buchele satisfies the language of claim 40 which requires, inter alia, "a two-winding transformer associated with each transistor."

The 35 U.S.C. § 102(e) rejection of claims  
70, 71, and 73-80 based on Carroll.

In addressing the limitations set forth in independent claim 70, we note that the Examiner makes reference to the illustrations in Carroll's Figures 3 and 4B as disclosing the claimed alternating magnetic field embedding of a bit-timing clock signal. Appellants' arguments in response (Brief, pages 51-54) assert that, unlike the claimed invention in which a bit timing clock signal is embedded in an alternating magnetic field generated by the reader, the transponder 40, i.e., the tag, in Carroll embeds a clock signal in the carrier transmitted from the controller 10, i.e., the reader. According to Appellants (id., at 52), when Carroll's controller 10 receives a transmission from transponder 40, it extracts the bit

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<sup>1</sup> Since the Examiner has not addressed the issue of obviousness to the skilled artisan of interchangeably using P- and N-channel devices according to particular circuit considerations, we have no such rejection before us and, accordingly, we decline to rule on the merits of such a rejection.

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timing clock signal and then transmits data to the transponder utilizing the extracted bit timing signal, thereby avoiding the need to include a bit timing signal in its transmission.

After reviewing the Carroll reference in light of the arguments of record, we find ourselves in general agreement with the Examiner's position as stated in the Answer. As asserted by the Examiner (Answer, pages 14 and 15), to whatever extent Appellants are correct in their characterization of Carroll as originating the generation of a bit timing clock signal at the transponder, no such requirement is set forth in claim 70 which merely requires the embedding of a bit timing clock signal in an alternating magnetic field generated by the reader. We agree with the Examiner that the alternating magnetic field generated from the reader in Carroll and received at element 58 in Carroll's Figure 3 transponder, the output of which is a clock signal input to timing control 60, has embedded therein a bit timing clock signal as claimed, regardless of the fact that such bit timing clock signal may have ultimately originated in the transponder.

The Examiner makes a similar rejection with respect to independent claim 71 which differs in one respect from claim 70 by reciting the generation of a bit-timing clock signal. We again find ourselves in agreement with the Examiner (Answer, page 15)

that the claimed clock signal generating feature is met by the encoder 70 in the transponder of Carroll since the body of the claim does not require that the clock signal generation originate at the reader.

With regard to the clock signal generation feature, claim 71 also differs from claim 70 by including in the claim preamble language which recites that a bit timing signal generated by the tag is synchronized with a bit timing signal "originating with the interrogator." Although we disagreed with the Examiner's treatment of claim preamble language with respect to previously discussed claim 32 and 72, we agree with the Examiner that the language of claim 71 does not require that limitations in the preamble be given patentable weight. A review of the limitations in claim 71 reveals that a step of "generating a bit-timing clock signal" (our emphasis) is set forth. There is no clear indication or requirement that such a bit-timing clock signal corresponds to the bit-timing clock signal referenced in the preamble. In other words, the preamble of claim 71 which sets forth a specific manner in which an interrogated tag responds to an interrogation, is a mere intended use of the claimed method of interrogating a tag set forth in the body of the claim.

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We also sustain the Examiner's rejection of independent claim 75 based on Carroll. Appellants reiterate their contention (Brief, pages 73 and 74) that Carroll does not disclose the embedding of a bit-timing clock signal in the alternating magnetic field generated at the reader. For all of the reasons discussed previously, we find such argument to be unpersuasive since there is no claimed requirement that the bit-timing clock signal originate at the reader. We also find no argument from Appellants that would convince us of any error in the Examiner's position (Answer, page 18) that Carroll discloses the control of the start of a transmitted bit sequence by a bit-timing signal since the disclosed transmitted bit sequence follows the bit-timing signal (e.g., Carroll, Figure 4A).

Further, with respect to claims 70, 71, and 75, we find to be unpersuasive Appellants' arguments which assert that the claims are set forth in step-plus-function format and that the Examiner has not properly interpreted the limitations of the appealed claims in accordance with the decision in In re Donaldson, 16 F.3d 1189, 1191, 29 USPQ2d 1845, 1848-49 (Fed. Cir. 1994). The Federal Circuit has cautioned that, in order for elements in a method claim to be construed as step-plus-function limitations, steps plus function without acts must be present. "If we were to construe

every process claim containing steps described by an 'ing' verb, such as passing, heating, reacting, transferring, etc., into a step-plus-function, we would be limiting process claims in a manner never intended by Congress." See O.I. Corp. v. Tekmar, 115 F.3d 1576, 1583, 42 USPQ2d 1777, 1782 (Fed. Cir. 1997).

The Federal Circuit has also recognized, as is the case here, that the absence of explicit "step for" language in the claims does not automatically prevent a limitation from being construed as a step-plus-function limitation. "[C]laim elements without express step-plus-function language may nevertheless fall within Section 112, Para. 6 if they merely claim the underlying function without recitation of acts for performing that function. See Seal-Flex Inc. v. Athletic Track and Court Construction, 172 F.3d 836, 850, 50 USPQ2d 1225, 1234 (Fed. Cir. 1999). The Court in Seal-Flex, 172 F.3d at 849, 50 USPQ2d at 1234 provided guidance as to how to interpret process claims that may lack explicit step-plus-function language as follows:

In general terms, the "underlying function" of a method claim element corresponds to *what* that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. "Acts," on the other hand, correspond to *how* the function is accomplished. Therefore, claim interpretation focuses on what the



claim limitation accomplishes, i.e., its underlying function, in relation to what is accomplished by the other limitations and the claim as a whole.  
(Emphasis in original).

With the above discussion in mind, it is our view that the underlying function set forth in claims 70 and 71, and what is accomplished by the claim as a whole, is the interrogation of a tag. Further, it is our opinion that, contrary to Appellants' contention (Brief, pages 55 and 60), the method steps of "embedding a bit-timing clock signal" (claim 70) and "generating a bit-timing clock signal" (claim 71) do not set forth "functions" but, rather recite "acts" which, when considered with the other method steps such as "generating an alternating magnetic field," "embedding data," and "extracting data," describe how the underlying function of tag interrogation is performed. We take a similar view with respect to method claim 75 and consider the underlying function to be the responding by a responder (tag) to the data transmitted from the reader. Similar to the discussion with regard to claims 70 and 71, we consider the method step of "generating a bit-timing clock signal" to merely recite an "act" which, when considered with the other method steps, describes how the underlying function of tag response to transmitted data from a reader is performed.

We do not sustain, however, the Examiner's rejection of independent claim 76 (nor its dependent claim 79) which, in

contrast to claim 75 discussed supra, contains a positive limitation in the body of the claim that the bit-timing clock signal generated by the responder is synchronized to the bit-timing clock signal "originating with the interrogator." We do not disagree with the Examiner (Answer, page 19) that the sync generator 70 in the transponder of Carroll is synchronized to the received clock signal from the interrogator. As pointed out by Appellants (Brief, pages 77 and 78), however, the received bit-timing clock signal received at the transponder in Carroll from the interrogator originates in the transponder (which the interrogator then uses to transmit data to the transponder), and not the interrogator as claimed.

Turning to a consideration of the Examiner's 35 U.S.C. § 102(e) rejection, based on Carroll, of independent claim 73, which includes a limitation directed to the maintaining of resonance of the claimed resonating circuit, we find ourselves in agreement with Appellants' arguments at pages 62-64 of the Brief. In addressing the claimed resonance maintaining feature, the Examiner relies on the principle of inherency by asserting (Answer, page 16) that "[t]his feature is inherent to any receiver that is attempting to receive data on a carrier ...."

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Although the Examiner contends that Appellants have ignored the Examiner's evidence that supports the assertion of inherency, our review of the record before us reveals no such evidence forthcoming from the Examiner. To establish inherency, evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and would be recognized as such by persons of ordinary skill. In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999), citing Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. citing Continental, 948 F.2d at 1269, 20 USPQ2d at 1749.

In view of the above discussion, since all of the claim limitations are not present in the disclosure of Carroll, we do not sustain the Examiner's 35 U.S.C. § 102(e) rejection of independent claim 73, nor of claim 78 dependent thereon.<sup>2</sup>

We also do not sustain the Examiner's 35 U.S.C. § 102(e) rejection, based on Carroll, of independent claims 74 and 77 (and

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<sup>2</sup> We make the observation that the language "the sequence of bits" at line 6 of claim 73 lacks antecedent basis.

its dependent claim 80), each of which includes the feature of "performing at least one weighted integration" of a signal derived from an alternating magnetic field generated by an interrogator.<sup>3</sup> Although the Examiner asserts (Answer, page 17) that the "divide-by-64" operation performed by timing control circuit 60 in Carroll is a "weighted integration" as claimed, we find no support for such a conclusion. As pointed out by Appellants (Brief, page 68), the timing control circuit 60 in Carroll is merely a synchronous counter and has little relevance to the claimed performance of a weighted integration of a received signal which, at a minimum, would involve the multiplication by a weighting function of a received signal during a bit period and the integration of the result.

The 35 U.S.C. § 103(a) rejection of claims 1, 3, 41, and 43 as being unpatentable over Chatelot in view of Kurusu.

Independent claims 41 and 43 are directed to the particulars of a coupling arrangement for the reader and tag circuitry which ties together a transformer, a coil, two capacitors and a coil driver. In making the obviousness rejection, the Examiner asserts

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<sup>3</sup> The copy of the claims appearing in the appendix to the Brief mistakenly has claim 80 dependent on claim 7.

(Answer, pages 6, 7, 20, and 21) the obviousness to one of ordinary skill to include transformers, as taught by Kurusu, in the system of Chatelot, relying on the general principle that transformers are well known to provide an isolation feature that serves to protect circuit elements from damage.

Although we do not dispute the Examiner's generalized assertion that transformers can be used to provide isolation among circuit elements, we agree with Appellants (Brief, page 95) that the Examiner has not established proper motivation for the proposed combination of Chatelot and Kurusu. The disclosure of Chatelot is directed to coil and coupling circuitry for communication between a tag and a reader which, as recognized by the Examiner, lacks any disclosure of a transformer coupling. On the other hand, Kurusu is directed to an overvoltage protection circuit which, although including a transformer 17, utilizes the transformer only as a coupling connection from filter 13 to transistor 16. Given the fact that Chatelot and Kurusu are directed to different problems in the communication art, with disparate solutions to such problems, it is our view that any attempt to combine them could come only from Appellants' own disclosure and not from any teaching or suggestion in the references themselves.

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Further, even if proper motivation were found to exist for the proposed combination of Chatelot and Kurusu, we find no indication from the Examiner as to how and in what manner the references would be combined to arrive at the specific combination set forth in appealed independent claims 1 and 41. In our view, the Examiner has combined the transformer connection teachings of Kurusu with the reader and tag communication circuitry disclosure of Chatelot in some vague manner without specifically describing how the teachings would be combined to arrive at the claimed invention. This does not persuade us that one of ordinary skill in the art having the references before her or him, and using her or his own knowledge of the art, would have been put in possession of the claimed subject matter.

In view of the above discussion, since all of the claim limitations are not taught or suggested by the applied prior art, it is our opinion that the Examiner has not established a prima facie case of obviousness, based on the combination of Chatelot and Kurusu, with respect to appealed independent claims 1 and 41. Therefore, we do not sustain the Examiner's 35 U.S.C. § 103(a) rejection of claims 1 and 41, nor of claims 3 and 43 dependent thereon.

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The 35 U.S.C. § 103(a) rejection of claims 1, 2, 4, 41, 42, 44, and 45 as being unpatentable over Chatelot in view of Ogita.<sup>4</sup>

We do not sustain this rejection for reasons similar to those discussed supra with respect to the Examiner's obviousness rejection based on Chatelot and Kurusu. As with the Examiner's proposed combination of Chatelot and Kurusu, we simply find no indication as to how and in what manner the transformer circuitry of Ogita, which connects tuning capacitor 34 to amplifier 37, would be combined with the tag and reader circuitry of Chatelot to arrive at the specific combination set forth in independent claims 1 and 41. Similarly, as with the rejection based on Chatelot and Kurusu, we find no evidence that would support the Examiner's contention that one of ordinary skill would look to the disclosure of Ogita, which suggests the use of a transformer to provide impedance matching between an antenna and an amplifier, to solve a problem associated with coupling a driving signal to a coil in a tag and reader communication circuit as in Chatelot.

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<sup>4</sup> The Examiner's statement of the grounds of rejection (Answer, page 7) apparently mistakenly omits independent claims 41 and 43 since the Office action mailed January 15, 2004, Paper No. 6, as well as the arguments at page 21 of the Answer indicate they are to be included.

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The 35 U.S.C. § 103(a) rejection of claims 5-13, 25, 47-60, and 62-64 as being unpatentable over Carroll.<sup>5</sup>

We consider first the Examiner's rejection of independent claim 5 which includes, inter alia, connecting circuitry for a reader which includes a capacitor coupled to a driving coil. In addressing this limitation, the Examiner, while recognizing that Carroll lacks a disclosure of a capacitor coupled to a coil in the reader (controller) 10 circuitry of Carroll, nevertheless directs attention to the tuning capacitor 44 in the tag (transponder) 40 of Carroll. According to the Examiner (Answer, pages 8, 21, and 22), the skilled artisan would have been motivated and found it obvious to include a tuning capacitor in the reader circuitry of Carroll since Carroll teaches the use of a capacitor to provide tuning in the tag circuitry.

After reviewing the arguments of record, we are in general agreement with Appellants' assertions at pages 118 and 119 of the Brief. In particular, we find to be misplaced the Examiner's argument (Answer, page 21) that Appellants have provided no evidence as to why a tuning capacitor would not be desirable in the reader of Carroll. To the contrary, it is the Examiner who has the

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<sup>5</sup> As noted by Appellants (Brief, page 2), and verified by the Examiner's arguments (Answer, page 24), claim 49 was apparently mistakenly omitted from the statement of the grounds of rejection at page 7 of the Answer.



burden of establishing, by convincing arguments and/or evidence, a prima facie case of obviousness. With regard to the issue of obviousness in the present factual situation, we find particularly compelling Appellants' arguments (Brief, page 119) that, although Carroll found the need to use a tuning capacitor in the tag circuitry 40, he found no such need and did not do so in the reader circuitry 10.

Accordingly, since all of the claim limitations are not taught or suggested by the applied prior art, it is our opinion that the Examiner has not established a prima facie case of obviousness with respect to appealed independent claim 5. Therefore, we do not sustain the Examiner's 35 U.S.C. § 103(a) rejection of independent claim 5, nor of claims 6-13 dependent thereon.

Turning to a consideration of the Examiner's obviousness rejection of independent claim 25 based on Carroll, we do not sustain this rejection as well. We agree with Appellants that, in contrast to the requirements of claim 25, Carroll does not disclose the use of frequency shift keying (FSK) to transmit data from the transponder/tag 40 to the reader/controller 10 but, rather, utilizes a phase shift keying technique (PSK). Further, to whatever extent the Examiner is suggesting the interchangeability

of FSK and PSK transmission techniques, we find no evidence forthcoming from the Examiner that would support such an assertion.

We do agree with the Examiner, however, that the limitations of independent claims 47 and 56 are taught by Carroll. Appellants' arguments in response (Brief, pages 140, 151, and 152) refer to similar arguments made with respect to the Examiner's 35 U.S.C. § 102(e) rejection of claim 70 based on Carroll, which arguments we found to be unpersuasive as discussed supra. As discussed previously, it is our view that the transponder 40 in Carroll receives from the reader 10 a transmitted signal which has embedded therein a bit-timing clock signal, regardless of the fact that such bit-timing clock signal may have ultimately originated at the transponder. Similarly, Appellants' argument that Carroll does not receive a bit-timing clock signal originating at the reader upon which the transponder synchronizes its own bit-timing clock signal is without merit since the claim language does not require that the bit-timing clock signal originate at the reader. We further find no error in the Examiner's position (Answer, pages 23 and 24) that the sync element 70 in the transponder 40 of Carroll synchronizes the transponder bit-timing clock signal with the received periodic bit signal from the reader with start/end points which embed the bit-timing signal into the driving signal.

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We do not sustain the Examiner's 35 U.S.C. § 103(a) rejection, based on Carroll, of dependent claims 48-50, each of which contains limitations directed to the weighted integration feature. As previously discussed with respect to the Examiner's 35 U.S.C. § 102(e) rejection, based on Carroll, of independent claims 74 and 77, we find no support on the record before us that the timing control circuit 60 or the address register 62 perform a weighted integration operation as asserted by the Examiner.

We also do not sustain the Examiner's 35 U.S.C. § 103(a) rejection, based on Carroll, of dependent claims 51-55, which are directed to the particulars of a bit-identifying operation and the adjustment of bit-start indicators. As asserted by Appellants (Brief, pages 148-150), the Examiner has never attempted to show how the disclosure of Carroll teaches or suggests the claimed limitations, and, accordingly, no prima facie case of obviousness has been established.

We do, however, sustain the Examiner's 35 U.S.C. § 103(a) rejection, based on Carroll, of dependent claims 57-60, which are directed to the particulars of the phase-shift coding technique used for transmitting data from the tag to the reader. As asserted by the Examiner (Answer, page 25), the language of claims 57-60 simply does not require the interpretation urged by Appellant at

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pages 153-158 of the Brief. We find no error in the Examiner's stated position that the phase-shift coding procedure disclosed by Carroll, in which a "0" is transmitted during a first phase of a bit portion of a signal and a "1" is transmitted during a second phase of the bit portion of the signal, satisfies the requirements of the claims.

Turning to a consideration of the Examiner's 35 U.S.C. § 103(a) rejection, based on Carroll, of dependent claims 62-64, we do not sustain this rejection for essentially the same reason as previously discussed with regard to independent claim 25. As with claim 25, dependent claims 62-64 are directed to a frequency-shift keying procedure for transmitting data from the tag to the reader. In our view, regardless of the merits of Appellants' arguments directed to the significance of the presence of "periodic signal" language in claims 62-64, the disclosure of Carroll, which utilizes phase-shift keying to transmit data from the transponder/tag 40 to the reader/controller 10, does not satisfy the frequency-shift keying requirements of claims 62-64.

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The 35 U.S.C. § 103(a) rejection of claims 14-17, 61, and 64-68 as being unpatentable over Carroll in view of McFarlane.

Dependent claims 14-17, 61, and 64-68 are directed to the feature of transmitting data between a reader and tag utilizing combined frequency-shift and phase-shift coding techniques. In addressing the limitations of these claims, the Examiner adds McFarlane, which describes a combined frequency-shift and phase-shift keying system, to the disclosure of Carroll.

After reviewing the McFarlane reference in light of the arguments of record, we find Appellants' arguments to be persuasive. With respect to claims 14 and 61, we agree with Appellants that, although the Examiner asserts (Answer, page 26) correspondence between the illustrated system in Figure 2a of McFarlane and that claimed, we fail to find any support for such a conclusion. As pointed out by Appellants, the fact that McFarlane may disclose that a driving signal may have one of two frequency values and one of two phase values, does not satisfy the claim language which requires that the phase of a driving signal have one of two frequency values and one of two phase values.

Similarly, it is our view that McFarlane's disclosure of a combined frequency-shift and phase-shift keying system does not disclose the particular features of claims 15-17 and 64-68 which

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set forth varying techniques of applying FSK/PSK modulation techniques to a periodic signal and then using the modulated periodic signal to modulate the driving signal.

Accordingly, since, even if combined, the collective teachings of Carroll and McFarlane would not satisfy the claimed limitations, a prima facie case of obviousness has not been established, and, therefore, the Examiner's obviousness rejection of claims 14-17, 61, and 64-68 based on the combination of Carroll and McFarlane is not sustained.

In summary, we have not sustained the Examiner's 35 U.S.C. § 112, first paragraph, rejection of claims 20-24, nor the 35 U.S.C. § 102(b) rejection of claims 32 and 72 based on Waraksa. With respect to the 35 U.S.C. § 102(e) rejection of claims 36-40 based on Buchele, we have sustained the rejections of claims 36 and 39, but have not sustained the rejections of claims 37, 38, and 40. With respect to the 35 U.S.C. § 102(e) rejection of claims 70, 71, and 73-80 based on Carroll, we have sustained the rejection of claims 70, 71, and 75, but have not sustained the rejection of claims 73, 74, and 76-80. We also have not sustained the 35 U.S.C. § 103(a) rejection of claims 1, 3, 41, and 43 based on the combination of Chatelot and Kurusu, nor the 35 U.S.C. § 103(a)

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rejection of claims 1, 2, 4, 41, 42, 44, and 45 based on the combination of Chatelot and Ogita. With respect to the 35 U.S.C. § 103(a) rejection of claims 5-13, 25, 47-60, and 62-64 based on Carroll, we have sustained the rejection of claims 47 and 56-60, but have not sustained the rejection of claims 5-13, 25, 48-55, and 62-64. Lastly, we have not sustained the 35 U.S.C. § 103(a) rejection of claims 14-17, 61, and 64-68 based on the combination of Carroll and McFarlane. Accordingly, the Examiner's decision rejecting claims 1-17, 20-25, 32, 36-45, 47-68, and 70-80 is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. and TM Office 21(September 7, 2004)).

AFFIRMED-IN-PART

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